

5

the limiting surface 2116 of the limiting protrusion 2113 blocks the stopper portion 134 of the base seat 10, thereby preventing the rotary member 21 from rotating any further. Therefore, an angle range of the rotary member 21 is limited. In alternative embodiments, the angle defined by the two limiting surfaces 2115, 2116 can be adjusted to any desired limits.

When an external force is applied to either open or close the display cover 203 relative to the main body 201, the brackets 32 are rotated around the rotational axis B relative to the rotary member 21. Frictional forces created between the sleeve portions 321 of the brackets 32 and the second shaft portions 312 of the pivotal shafts 31 enable the display cover 203 to be retained in any desired position. In an alternative embodiment, any spring washers or friction washers may be included to sleeve on the second shaft portions 312, between the first shaft portions 311 and the brackets 32. The spring washers would provide axial forces in directions along the rotational axis B to create frictional forces between the friction washers and the brackets 32, thus enabling the display cover to be stably retained in any desired portion.

The fastening member 29 is rotatable along the screw portion 2172 of the rotational shaft 217 to adjust the elastic force of the elastic member 25 between the bottom end 114 of the housing 11 and the steady member 23. When the elastic force is increased, the frictional force generated between the steady member 23 and the rotary member 21 is also increased. When the elastic force is decreased, the frictional force generated between the steady member 23 and the rotary member 21 is also decreased. Thus, the external force that overcomes the frictional force generated between the steady member 23 and the rotary member 21 for rotating the display cover is adjustable to meet different requirements of different electronic devices. Therefore, the dual-axis hinge mechanism 100 is convenient to use.

It is believed that the present embodiments and their advantages will be understood from the foregoing description, and it will be apparent that various changes may be made thereto without departing from the spirit and scope of the disclosure or sacrificing all of its material advantages, the examples hereinbefore described merely being preferred or exemplary embodiments of the disclosure.

What is claimed is:

1. A dual-axis hinge mechanism, comprising:

a base seat;

a first rotatable assembly comprising:

a steady member non-rotatably received in the base seat;

an elastic member non-rotatably received in the base seat;

a rotary member rotatably assembled in the base seat, and comprising a rotational shaft having a threaded screw portion;

a fastening member rotatable along the rotational shaft by threaded cooperation to adjust an external force for rotating the rotary member; and

a second rotatable assembly comprising a pivotal shaft fixed to the rotary member, and a bracket pivotally assembled on the pivotal shaft;

wherein the threaded screw portion of the rotational shaft extends through the steady member, the elastic member, the base seat, and then engaging with the fastening member, each of the rotary member and each of the steady member comprises an engaging surface, the engaging surfaces movably engage with each other, and one of the engaging surfaces forms at least one peak, and the other of the engaging surfaces defines at least one valley corresponding to the at least one peak.

6

2. The dual-axis hinge mechanism of claim 1, wherein the base seat comprises a substantially barrel shaped housing; a generally polygonal cavity is defined in the housing; the steady member is prism shaped, and a cross-section of the steady member is substantially the same shape as the cavity of the base seat; the elastic member comprises a plurality of elastic pieces configured to be non-rotatably received in the cavity of the base seat.

3. The dual-axis hinge mechanism of claim 1, wherein the base seat comprises a stopper portion; the rotary member comprises a limiting protrusion that blocks the stopper portion thereby restricting further rotation of the rotary member in a clockwise direction and in a counterclockwise direction.

4. The dual-axis hinge mechanism of claim 3, wherein the base seat comprises a mounting portion; the stopper portion is defined on a top surface of the mounting portion; the rotary member comprises a support board; a limiting protrusion extends from the periphery of the support board, and comprises two limiting surfaces, the angle defined by the two limiting surfaces is 90 degrees.

5. The dual-axis hinge mechanism of claim 4, wherein the rotary member comprises an extending portion extending from the first surface of the support board; a non-circular key hole is defined in the extending portion; the pivotal shaft of the second rotatable assembly comprises a first shaft portion and a cylindrical second shaft portion, a cross-section of the first shaft portion is substantially the same shape as the key hole; the first shaft portion of the pivotal shaft is configured to be non-rotatably inserted into the key hole of the extending portion.

6. The dual-axis hinge mechanism of claim 5, wherein the bracket comprises a sleeve portion configured to be sleeved on the second shaft portion of the pivotal shaft.

7. The dual-axis hinge mechanism of claim 4, wherein the rotary member comprises a cam portion formed on the second surface of the support board, the cam portion comprises a first engaging surface and forms four evenly spaced peaks at the first engaging surface; the steady member comprises a second engaging surface for engaging with the first engaging surface of the rotary member, and defines four valleys in the second engaging surface corresponding to the four peaks of the rotary member.

8. The dual-axis hinge mechanism of claim 4, wherein the rotational shaft is extending perpendicularly from the support board of the rotary member; the rotational shaft is substantially cylindrical.

9. The dual-axis hinge mechanism of claim 1, wherein the first rotatable assembly comprises a friction washer positioned between the base seat and the fastening member; a recessed portion for receiving the fastening member is defined in a surface of the friction washer.

10. The dual-axis hinge mechanism of claim 9, wherein the friction washer is made of polyoxymethylene with a lower friction coefficient than general plastic materials.

11. The dual-axis hinge mechanism of claim 1, wherein the base seat is manufactured by casting magnesium alloy or aluminum alloy.

12. The dual-axis hinge mechanism of claim 1, wherein one of the rotary member and the steady member is made of wear resistance materials, and manufactured by powder metallurgy method.